

In the Specification:

Please amend the specification by substituting the paragraphs indicated below for the paragraphs as previously presented. Amendments to the specification are shown with additions underlined and deletions in [brackets].

Please replace the paragraph under the heading "Cross Reference to Related Applications" on page 1 with the following paragraph:

This application is a continuation of U.S. Application Serial No. 09/675,995, filed on September 29, 2000, entitled "Increasing Force Transmissibility for Tactile Feedback Interface Devices" and also[This application] claims the benefit of Provisional Patent Application no. 60/157,206, filed September 30, 1999 by Shahoian et al., entitled "Increasing Vibration Transmissibility in Vibrotactile Controllers by Tuning Suspension Compliance," [and]each of which is incorporated herein by reference [for all purposes]in their entirety.

Please replace the second paragraph on page 7 with the following paragraph:

In its most direct operation, the ERM can be rotated in only one direction at a desired frequency to produce a vibration at that frequency. Each output frequency has a magnitude associated with it, so that high frequency vibrations tend to have higher magnitudes than low frequency vibrations. Alternatively, control techniques can be used to independently control magnitude and frequency of vibrations output by an ERM driven in only one direction. For example, a pulse can be applied each period of the sine wave to cause oscillations at a desired frequency and magnitude. Several of these techniques are disclosed in copending application no. 09/[]669,029, filed 9/25/00, entitled, "Controlling Haptic Sensations for Vibrotactile Feedback Interface Devices", and incorporated herein by reference.

Please replace the third paragraph starting at the bottom of page 7 and continuing to the top of page 8 with the following paragraph:

In other embodiments, the ERM's of the motors can be driven harmonically. For example, bi-directional amplifiers can be included to oscillate an ERM to provide periodic inertial forces, and a forcing function such as a sine wave is used to control the oscillation. In many embodiments, this allows more crisp and higher bandwidth vibrations to be output. Furthermore, the magnitude and frequency of the vibrations can be independently controlled more directly by simply altering the control waveform. Harmonic operation of a rotating mass is described in greater detail in copending application no. 09/[]608,125, filed 7/1/00 and entitled, "Controlling Vibrotactile Sensations for Haptic Feedback Devices", and is incorporated herein by reference. A problem with this bi-directional control method is that the oscillatory control and motion of the rotating mass requires more power than driving the motor in one direction. Often, only a limited amount of power is available to drive the motors in a gamepad or other handheld controller, so that the maximum vibration magnitude is often a lower magnitude than is desired for many inertial tactile feedback sensations. The present invention, however, provides greater magnitude vibrations that allows a harmonic system to be much more effective, as described below.

Please replace the first full paragraph on page 8 with the following paragraph:

Other embodiments can include other types of actuators or actuator assemblies. For example, an actuator assembly providing linear inertial forces is described in copending patent application 09/[]585,741, filed 6/[2]2/00, entitled, "Haptic Interface Device and Actuator Assembly Providing Linear Haptic Sensations," which is incorporated herein by reference. This actuator assembly linearly oscillates an inertial mass, which can be a separate

mass or an actuator itself, by providing a harmonic drive signal. Other harmonic and other types of actuator assemblies which can be used to provide inertial tactile sensations in accordance with the present invention are described in copending applications nos. 09/[]967,494, filed 9/2[8]7/00, entitled "Providing Directional Tactile Feedback and Actuator for Providing Tactile Sensations"; [09/]60/263,558, filed 9/28/00, entitled "Device and Assembly for Providing Linear Inertial Sensations," and [09/]60/236,897, filed 9/28/00, entitled "Directional Inertial Tactile Feedback Using Rotating Masses", all incorporated herein by reference.